

**REMARKS/ARGUMENTS**

The Applicants originally submitted Claims 1-21 in the application. In the present preliminary amendment, the Applicants have amended Claims 1-4, 7-9, 14-17 and 21. Support for the amendment can be found in the original specification at paragraphs 8-9, 12, 28-38 and Figures 2-4. As such, the amendment does not add any new matter.

The Applicants have not amended, canceled or added any other claims. Accordingly, Claims 1-21 are currently pending in the application.

**I. Rejection of Claims 1-14 under 35 U.S.C. §103**

Previously, the Examiner rejected Claims 1-14 under 35 U.S.C. §103(a) as being unpatentable over Applicant Admitted Prior Art (AAPA) in view of U.S. Patent No. 4,562,425 to Turner, *et al.*, in further view of a portion of the textbook prepared by Rappaport and in further view of U.S. Patent No. 6,553,087 to Alelyunas, *et al.* The Applicants respectfully disagree.

The Examiner has recognized that the combination of AAPA, Turner and Rappaport does not teach or suggest recognizing a candidate symbol as being a zero-amplitude symbol when the candidate symbol is closer to an origin of a constellation than to symbols proximate thereto. (*See* Examiner's Final Rejection, page 5, line 21 to page 6, line 15.) To teach such recognizing, the Examiner cited Alelyunas. (*See* Examiner's Final Rejection, page 6, line 16 to page 7, line 7.)

Alelyunas, however, does not teach or suggest recognizing a candidate symbol extracted from a quadrature amplitude modulated (QAM) signal as being a zero-amplitude symbol based on when the candidate symbol is closer to an origin of a constellation than to symbols proximate thereto as recited in amended independent Claims 1 and 8. In fact, the Applicants do not even find where Alelyunas discloses a QAM signal or is even concerned with a zero-amplitude symbol

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of a QAM signal. Instead, Alelyunas is concerned with interpolating bandpass filters that are used for synchronizing packet-data at receivers. (See column 1, lines 16-19.)

Furthermore, even if Alelyunas does teach or suggest recognizing a candidate symbol extracted from a QAM signal as being a zero-amplitude symbol, Alelyunas does not teach or suggest such recognizing based on when the candidate symbol is closer to an origin of a constellation than to symbols proximate thereto. On the contrary, Alelyunas discloses a receiver having a slicer that chooses from a set of possible valid receivable levels a level, or "point" which most closely matches the current received signal level. (See column 3, lines 41-43.) Thus, Alelyunas appears to disclose a conventional slicer that uses a rectangular area around the origin of the constellation to detect zero-amplitude symbols. Accordingly, a received signal in Alelyunas is recognized as a non-zero symbol based on if the received signal is within the rectangular area. As such, a received signal may be recognized as a non-zero amplitude symbol even when the received signal is actually closer to the origin. (See, for example, the specification of the present invention at paragraphs 6, 9, 23, 36-38 and Figure 4.) Alelyunas, therefore, does not teach or suggest recognizing a candidate symbol extracted from a QAM signal as being a zero-amplitude symbol based on when the candidate symbol is closer to an origin of a constellation than to symbols proximate thereto as recited in amended independent Claims 1 and 8. Alelyunas, therefore, does not cure the above deficiency of the combination of AAPA, Turner and Rappaport.

Since the cited combination of AAPA, Turner, Rappaport and Alelyunas does not teach or suggest recognizing a candidate symbol as being a zero-amplitude symbol based on when the candidate symbol is closer to an origin of a constellation than to symbols proximate thereto, the cited combination does not teach or suggest each element of independent Claims 1 and 8. The

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cited combination, therefore, does not provide a *prima facie* case of obviousness of independent Claims 1 and 8 and Claims dependent thereon. As such, Claims 1-14 are not unpatentable in view of the cited combination. Accordingly, the Applicants respectfully request the Examiner to withdraw the §103(a) rejection with respect to Claims 1-14 and allow issuance thereof.

Additionally, the Applicants also do not find where Alelyunas or any of the other references of the cited combination teach or suggest each additional element of amended dependent Claims 2, 4, 7, 9 and 14. Regarding dependent Claims 2 and 9, the Applicants find no teaching or suggestion in Alelyunas of determining a candidate symbol is closer to an origin than to symbols proximate thereto when a sum of an absolute value of A and B coordinates of the candidate symbol is less than one. The Applicants also find no teaching or suggestion in Alelyunas of employing a linear algorithm to determine the candidate symbol is closer to the origin than to the symbols proximate thereto as recited in dependent Claim 4. Furthermore, the Applicants find no teaching or suggestion in Alelyunas of determining if the candidate symbol is closer to the origin without employing a slicer table as recited in Claim 7 or conditionally employing a slicer table if the candidate symbol is not closer to the origin than to the symbols proximate thereto as recited in Claim 14. Instead, as stated above, Alelyunas teaches using a slicer table for matching all received signals (*see column 3, lines 41-43*) and does not teach or suggest conditionally employing a slicer table or determining if the received signal is closer to the origin by: summing the absolute value of coordinates, employing a linear algorithm, or not employing a slicer table. Accordingly, the cited combination does not teach or suggest each of the additional elements recited in amended dependent Claims 2, 4, 7, 9 and 14.

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## II. Rejection of Claims 15-21 under 35 U.S.C. §103

The Examiner has rejected Claims 15-21 under 35 U.S.C. §103(a) as being unpatentable over Alelyunas in view of Rappaport, AAPA and in further view of Turner. The Applicants disagree.

As discussed above, the cited combination of Alelyunas, Rappaport, AAPA and Turner does not teach or suggest recognizing a candidate symbol extracted from a QAM signal as being a zero-amplitude symbol based on when the candidate symbol is closer to an origin of a constellation than to symbols proximate thereto as recited in independent Claims 1 and 8. The cited combination, therefore, also does not teach or suggest each element of independent Claim 15 which also includes recognizing a candidate symbol as being a zero-amplitude symbol based on when the candidate symbol is closer to an origin of a constellation than to symbols proximate thereto. Thus, the cited combination of AAPA, Turner; Rappaport and Alelyunas does not provide a *prima facie* case of obviousness of independent Claim 15 and Claims dependent thereon. As such, Claims 15-21 are not unpatentable in view of the cited combination. Accordingly, the Applicants respectfully request the Examiner to withdraw the §103(a) rejection with respect to Claims 15-21 and allow issuance thereof.

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### III. Conclusion

In view of the foregoing amendment and remarks, the Applicants now see all of the Claims currently pending in this application to be in condition for allowance and therefore earnestly solicit a Notice of Allowance for Claims 1-21.

The Applicants request the Examiner to telephone the undersigned attorney of record at (972) 480-8800 if such would further or expedite the prosecution of the present application. The Commissioner is hereby authorized to charge any fees, credits or overpayments to Deposit Account 08-2395.

Respectfully submitted,

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